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ABSTRACT

To investigate the differences between an instructional program that explicitly emphasized both decoding and comprehension and one that emphasized only comprehension, a study engaged two groups of first grade children identified as being at risk for learning to read in both effective decoding instruction and meaningful comprehension and thinking activities. Many reading programs for use with academically at-risk students emphasize one aspect of reading, either decoding or comprehension, at the expense of the other. Two first-grade teachers were trained and coached in the use of reciprocal teaching. The researchers observed the teachers on a regular basis and provided them with support throughout the project. In the first phase of the study, reciprocal teaching was used as an intervention technique to improve students' ability to understand informational text that was being read aloud to them. The second phase of this study investigated the effectiveness of transferring reciprocal teaching from listening comprehension to reading comprehension. All the students received instruction in the same phonics program. Students in both the experimental (n=4; n=7) and the control (n=9) groups were administered criterion-referenced tests as pretests, interim tests, and posttests. Analysis of the data indicated that a reading program that includes both the intensive decoding program and reciprocal teaching is effective. Qualitative changes in students' dialogue in the reciprocal teaching sessions provided further evidence of the effectiveness of a reading program with a dual focus. (Thirty four references, five figures of data, and two appendixes are attached). (Author/NH)

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Center for the Study of Reading

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Abstract

This study investigated the differences between an instructional program that explicitly emphasizes both decoding and comprehension and one that emphasizes only comprehension. A reading program with a dual focus--the first based on a phonics program of proven effectiveness, the second based on reciprocal teaching that maximizes comprehension skills--was implemented with first-grade students at risk for learning to read. Although there have been many reading programs for use with academically at-risk students, most of these programs emphasized one aspect of reading, either decoding or comprehension, at the expense of the other. Two first-grade teachers were trained and coached in the use of reciprocal teaching. The researchers observed the teachers on a regular basis and provided them with support throughout the project. In the first phase of the study, reciprocal teaching was used as an intervention technique to improve students' ability to understand informational text that was being read aloud to them. The second phase of this study investigated the effectiveness of transferring reciprocal teaching from listening comprehension to reading comprehension. All the students received instruction in the same phonics program. Students in both the experimental and control groups were administered criterion-referenced tests as pretests, interim tests, and posttests. Analysis of the data indicates that a reading program that includes both the intensive decoding program and reciprocal teaching is effective. Qualitative changes in students' dialogue in the reciprocal teaching session provides further evidence of the effectiveness of a reading program with a dual focus.

THE EFFECTIVENESS OF AN INTENSIVE DECODING AND COMPREHENSION INSTRUCTIONAL READING PROGRAM WITH FIRST GRADE STUDENTS WHO ARE AT RISK FOR LEARNING TO READ

Reading instruction for children who are having trouble learning to read is a daily concern--in fact, a preoccupation--for the teachers who work with such children. This concern is shared by a number of researchers who, during the past 20 years, have developed a number of programs and procedures that are intended to meet more effectively the instructional needs of these children.

The content of some of these specially developed programs and their effect on children's reading achievement have been examined in some major evaluation studies (Allington, 1983; Allington, Stuetzel, Shake, & Lamarche, 1986; Johnston, Allington, & Afflerbach, 1985; Yssledyke, Thurlow, Mecklenberg, & Graden, 1984). In addition, a number of other evaluative studies have focused on the instruction given these children in more traditional classrooms and in Chapter 1 programs (Allington & Johnston, 1989; Allington & McGill-Franzen, 1989). Almost all of these studies have noted that, when compared to children who are learning to read without much difficulty, "at-risk" children spend notably more time on low-level decoding practice, and measurably less time involved with comprehension and higher level thinking activities.

The goal of this study was to engage two groups of first-grade children identified as being at risk for learning to read in both effective decoding instruction and meaningful comprehension and thinking activities.

In planning and carrying out this exploratory study, our intent was to investigate the effectiveness of combining two seemingly different approaches to reading instruction: (a) a highly organized and task-specific direct-instruction reading program known particularly for the effectiveness of its decoding instruction (Gersten & Carnine, 1986), and (b) the cognitively based discussion techniques of reciprocal teaching that is known for its effectiveness in improving students' comprehension of informational text (Palincsar & Brown, 1984).

These approaches--although radically different in content, procedures, and even philosophy of instruction--are similar in that each has been well documented in the research literature as particularly effective with students who have trouble learning to decode or to understand what they read.

At the beginning of the year, reciprocal teaching was initiated for both groups of first graders as a strategy for improving listening comprehension. As students became proficient readers, the reciprocal teaching focus moved from the comprehension of oral language to that of written language. We were also interested in examining the interaction of radically different approaches to reading, including reciprocal teaching and direct instruction.

The goal, in part, was to help the children in the experimental groups become better listeners by teaching them to discuss the informational text their teachers read to them--using the techniques of reciprocal teaching--and then to help them become better comprehenders by using the same techniques as they read informational text on their own.

In combining the two instructional approaches, our objective was to determine whether a double dose of two previously proven programs would lead to improved independent reading comprehension.

Review of the Research on At-Risk Students

Summarizing their review of research related to reading instruction for children at risk for learning to read, Garcia and Pearson (1990) suggest that "it is not uncommon for low-achieving students to receive instruction where emphasis is on decoding and not on comprehension" (p. 3).

In classroom observation studies of low-income first-grade students in California and of third-grade inner-city students in Chicago, Collins (1982) reported that children in low reading groups received far less instruction and practice in reading comprehension than students in high reading groups. Moll, Estrada, Diaz, and Lopes (1980) reported similar findings in a study that compared reading instruction given to Spanish-English bilingual children in both Spanish and English. Decoding activities were emphasized for even the middle- and high-ability Spanish readers when they were reading in English, because their English teachers misinterpreted the children' pronunciation difficulties as a signal that they were experiencing decoding problems.

A series of studies carried out during the past decade examined the school experiences of poor children, with a particular interest in those who participated in remedial and special education programs (Allington, 1983; 1986; Allington, Stuetzel, Shake, & Lamarche, 1986; Allington & Johnston, 1989; Allington & McGill-Franzen, 1989; Johnston, Allington, & Afflerbach, 1985; McGill-Franzen, 1987). These researchers investigated the literacy instructional experiences of children across the school day and across school settings. Their findings are alarming because of the nature of the remedial and special education interventions they found, and because the interventions rarely resulted in improved academic achievement for the students involved.

A comparison of the school experiences of lower and higher achieving children reveal discrepancies in several areas: (a) instructional experiences (particularly in regard to the amount of instructional time allocated), (b) types of instructional tasks assigned, and (c) the nature of the instructional interactions between students and teachers.

Instructional Time

Few instructional programs for low-achieving students reliably increase instructional time (e.g., Allington & McGill-Franzen, 1989; Haynes & Jenkins, 1986; Ysseldyke et al., 1984). It seems feasible, since they supplement classroom instruction, that the common small-group pullout programs should increase allocated time and result in higher student engagement, but the evidence suggests that off-task behavior is more frequent during pullout instructional times. Low-achieving students tend to be off-task more than higher achieving students, but the off-task behavior appears to be related to task difficulty and/or appropriateness. Gambrell, Wilson, and Gant (1985) suggest that, often, improving on-task behavior appears to be a goal of the literacy instruction provided low-achieving students.

Allington has also discussed the length of the instructional period. He suggests that instructional periods of 10-25 minutes influence both the type of instruction and tasks that are offered. Short time periods appear to be conducive to brief attempts at reading and writing that focus on literal or location tasks rather than on comprehension or composition tasks. He concludes that these shorter periods result in lower level and less engaging tasks.

Finally, although they argue that individualized instruction is a crucial element of educational interventions for at-risk learners, Allington and McGill-Franzen, (1989) and Thurlow, Ysseldyke, Garden, & Algonzzine (1984) maintain that little evidence is found to support the idea that instructional time allocations are related to individual needs. For example, children with greater deficits are not scheduled for more instruction than children with smaller deficits.

Instructional Tasks

The types of cognitive demands required of lower achieving students during instructional tasks are notably different from those required for higher achieving students. Allington (1988) asserts that higher achieving students learn to read for personal purposes and monitor their own performance to ensure attention to meaning, whereas lower achieving students learn to pronounce words aloud while being monitored externally by their teacher. He has observed that although poor readers appear to learn what is taught to them, what has been taught is substantially different from what better readers are taught.

For one of their classroom observation studies, Allington and McGill-Franzen (1989) conclude that at-risk children spent the vast majority of their school day working without instruction and alone on low-level tasks. When they spend time with teachers, their teachers interrupt them more often and ask fewer comprehension questions of them than they do with the higher achieving students. McGill-Franzen (1988) conclude that individualization for remedial and special education students often means working alone on low-level tasks. Allington (1988) contends individual instructional interactions between the teacher and the student are vital for effective instructional programs for at-risk children.

Allington cautions that, "The most efficient way to resolve a learning difficulty is not to double the amount on ineffective instruction" (p. 6). Instead, he recommends providing at-risk children with "coherent blocks" of literacy instruction using trade books, stories, and articles that emphasizes text comprehension and composition of extended texts.

Instructional Interactions

What teachers explain is critical to learning for at-risk students, primarily because these children appear less likely than other children to acquire incidentally the knowledge, conventions, and strategies of fluent reading and writing (Duffy, Roehler, Meloth, & Varrus, 1986; Duffy, Roehler, & Rackliffe, 1986). Yet in classroom observations, a focus on word- and sentence-level tasks dominated instruction for at-risk children, and that explicit teaching rarely occurred (Allington, 1988). Johnston and Allington (1991) conclude that remedial reading instruction emphasizes instructional activities that are not related to the goal of comprehension (e.g., reading books).

Allington (1988) suggests several guidelines for instructional programs for at-risk children:

1. Explicit explanation
2. Learner involvement in the reading and writing of extended texts
3. Coherence across instructional tasks and settings
4. Communicative interactions between teachers and children, and among children

We believe that the instructional program carried out for this study addresses many of the issues raised by researchers about literacy instruction for children who are at risk for learning to read.

The Two Approaches

The two instructional approaches used with the first-grade children in this study are described below.

Reciprocal Teaching

Reciprocal teaching is an interactive procedure that employs organized discussion as a format to enhance reading comprehension (Palincsar & Brown, 1984). During the past decade its effectiveness has been demonstrated in a variety of educational settings.

In reciprocal teaching, the teacher models four strategies:

1. *Summarizing*--the "teacher" summarizes aloud the most important information from a segment of the text just read.

2. *Question-Generating*--the "teacher" leads other members of the group by asking questions that relate to the segment of the text.

3. *Clarification*--the "teacher" clarifies or asks for clarification of any portion of the text that might be confusing.

4. *Prediction*--the "teacher" predicts what information is likely to occur in the next segment of text.

These strategies are included because they have been shown to facilitate understanding and comprehension monitoring (Palincsar, Brown, & Martin, 1987). These four strategies are not steps to be mastered, rather, they provide the framework for the discussion. Instruction occurs during these discussions. In reciprocal teaching classrooms, students gradually assume the role of teacher and engage in dialogue with the other students and the teacher as they construct meaning from the text. Student talk dramatically increases as the teacher talk decreases.

These strategies are typically used by expert readers, while slow-learning children and new readers seldom employ them (Brown & Palincsar, 1987). The ultimate goal of reciprocal teaching is to influence how students interact with the learning situation. It aims not just to remediate an immediate educational deficiency, but also to enhance student problem-solving abilities (Brown & Palincsar, 1987; Palincsar, 1986).

Each of the four strategies used in reciprocal teaching promote both comprehension of text and comprehension monitoring. When students make predictions, they hypothesize what the author will discuss next in the text. To do this successfully, they must activate the relevant background knowledge that they already possess. Prediction helps provide a purpose for reading--to either confirm or disprove their hypotheses. Additionally, the opportunity has been created for the students to link the new knowledge they will encounter in the text with the knowledge they already possess. The predicting strategy also facilitates the use of text structure. Students learn that headings, subheadings, and questions embedded in the text are useful means of anticipating what might occur next.

Question generating gives the student an opportunity to identify the kind of information that provides the substance of a good question, to form the question, and then engage in self-testing. Students become much more involved in the reading activity and in the text when they are posing and answering questions, not merely responding to teacher or text questions.

Summarizing is an excellent way to integrate the information presented in the text. As they proceed through the passage, the teacher will guide them in integrating the content across paragraphs and sections of the passage.

Clarifying is particularly important to students who have a history of comprehension difficulty. Such students can be thought of as making a habit of not understanding what they read. These students very

likely believe that the purpose of reading is saying the words correctly; they may not be particularly uncomfortable with the fact that the words--and in fact, the passage--are not making much sense. When students are asked to clarify, their attention is called to the fact that there may be many reasons why the text is difficult to understand (e.g., unfamiliar vocabulary, unclear referent words, new and perhaps complicated concepts). They are taught to be alert to the effects of such impediments on comprehension and to take the necessary steps to restore meaning (e.g., reread, ask for help).

Strategies are taught to students through a series of dialogues between the teacher and the students, with the dialogues centered on sections of text that students have first read silently. The teacher begins by asking a student to summarize the passage that has just been read. After the first student responds, other students are sought out to refine, shorten, or restate the answer. Next, a student is asked by the teacher to think of a question that could be asked about the information in the passage. After a student responds, other students again join in by refining the question.

Throughout the process, students are encouraged to seek clarification of words or concepts they do not understand. The teachers may lead students to discover word meanings or prompt them to apply previously learned strategies for clarification (e.g., using context for identifying the meaning of an unfamiliar word). Children are encouraged to speak up when something does not make sense to them. Finally, students are asked to think ahead and predict what information will follow in the next section of text.

Teacher modeling of the use of the strategies in appropriate contexts is an important instructional principle in this approach. Modeling is intended to make explicit and concrete the way in which students can use strategies to monitor their learning (Palincsar & Brown, 1988). An important feature of reciprocal teaching is that the students and teacher share or model how they are constructing meaning from text. As an expert, the teacher acts as a guide in shaping the learning efforts of novices and providing learning support for as long as needed.

During the initial phase of reciprocal teaching, the teacher acts as the discussion leader. As instruction progresses, the teacher's role changes from that of mediator/facilitator to reflector or coach. Through this interactive process, students gradually acquire proficiency in strategy use and, over time, teacher involvement fades and he or she relinquishes control of the discussion to the students.

The teacher's role in a reciprocal teaching lesson includes the following: acting as moderator, modeling the strategies, providing students with tailored feedback, and providing expert scaffolding. Over time, the teachers play a decreasing role as the students assume increasing responsibility for the discussion. All the interactions and instruction occur in the context of actually reading a text for meaning.

A case can be made that the success of reciprocal teaching is attributable to its context; that is, a social context in which students are comfortable and in which they have had more experience both in and out of school. Vygotsky (1978) asserted that the patterns of reasoning employed by individuals are a reflection of the patterns of social dialogue previously encouraged in group situations. A child with maturity, he reasons, appreciates shared dialogue and the utterances of more experienced persons. From this shared social dialogue develops inner speech that directs cognitive activity and, in turn, is internalized as verbal thought. In other words, as the group talks, the child borrows; evaluates and passes judgment on the vocabulary, syntax, and usages of others; synthesizes unique creations and usages; and structures his or her own thinking into ways that resemble the group's interactions (Moffett & Wagner, 1976). Discussions resulting from the use of the four reciprocal teaching strategies are an example of instructive shared dialogue.

Discussion of the reading text challenges students to organize, clarify, define, qualify, and analyze their thoughts and ideas. Such discussion has significant value in promoting reading comprehension. Perez and Strickland (1987), suggests that discussion of a reading selection encourages reading comprehension by reinforcing memory. Furthermore, it teaches children to think about what they read in new and

productive ways. Students trained to use the strategies of reciprocal teaching are able to do just that--think and talk about text in new and productive ways or, put another way, they are able to engage in desirable, genuine exchanges of ideas and opinions.

Like Vygotsky, Bruner (1978) supports the concept of novices learning from experts. He has asserted that one of the most crucial ways culture aids intellectual development is through the dialogue between the more experienced members of that culture and the less experienced members. Reciprocal teaching, through its collaborative, interactive structure, provides the less experienced with that critical opportunity for learning from the more experienced as well as the subsequent development of directive verbal reasoning (i.e., thinking).

The instructional principles underlying the use of the four strategies are (a) the teacher models the desired comprehension activities to make the processes explicit; (b) the modeling is contextualized--both the teacher and the students are reading the text; (c) the students are made aware of the value of strategy use; (d) the responsibility for the strategy application is gradually transferred from the expert (the teacher) to the novices (the students); and (e) continuous evaluative and encouraging feedback is provided to the students by the teacher.

The success of reciprocal teaching has been attributed to its use of some of the activities used by successful readers--hypothesizing, rephrasing, seeking relationships between ideas, and monitoring breakdowns in understanding (Bereiter & Bird, 1985). The four strategies engage the reader before, during, and after reading, thus setting the stage, continuing the interaction, and then allowing for the consolidation of ideas and concepts. Finally, the effectiveness of the strategies is apparently directly linked to the ongoing discussion as the students engage in each of the activities.

Although most of the studies involving reciprocal teaching have been with older students, Brown and Palincsar (1987) used the reciprocal teaching technique to improve the listening comprehension abilities of first-grade students designated as poor listeners. In this series of studies, first-grade teachers conducted orally based reciprocal teaching lessons with groups of 6 students. In each group, 4 students who were experiencing academic difficulty (as determined by teacher observation and performance on standardized measures of listening and reading comprehension) were joined by two normally progressing students who served as catalysts. Assessments administered orally indicated that the poor listeners' ability to learn from text being read aloud to them improved. In addition, and very importantly, classroom teachers reported their reciprocal teaching students were engaging spontaneously in discussions using the four strategies during reading group instruction. Palincsar and Brown (1988) concluded that this procedure conducted in a listening mode is a reasonable form of instruction.

The present study is an extension of the listening comprehension studies conducted by Palincsar and Brown. Although they investigated the effects of reciprocal teaching in the listening mode with first-grade students, our study goes one step further by examining the transfer of reciprocal teaching to facilitate comprehension from listening to reading with students identified as at risk for learning to read.

Direct Instruction

Direct instruction involves the teaching of essential information in the most effective and efficient manner possible. The effectiveness of this approach has been indicated by large-scale experimental studies and by studies that have investigated the characteristics of effective teachers (Carnine & Silbert, 1978).

The published direct instruction reading program used in this study is characterized by carefully designed and specifically planned tasks, teacher modeling, guided student practice, frequent questions, group and individual responses, provisions for immediate feedback, and "informational" correction of student errors.

Students and teachers are involved in constant interactions. In addition, group and independent practice is plentiful, and is closely related to the instruction.

The direct instruction beginning reading program introduces children to a strategy for a sounding-out analysis of words. They learn to identify each symbol in a word as a sound and to say the word fast. The program developers point out that teaching the children to sound out words has these advantages:

1. Children can read more words from a given amount of teaching. If children are taught 10 words as sight words, the children know those words. But, if children learn 10 symbols introduced as sounds, they are capable of reading over 1,000 regularly spelled words composed of those sounds.

2. The emphasis on sounding-out helps children attend to the details of words and to their spelling patterns. This becomes particularly important when children are confronted with words that are similar, such as: *when* and *then*, or *where* and *there*.

3. The children move from sounding-out words to identifying whole words by sight. The sounding-out procedure, however, serves as an important back-up, particularly when children read independently. By using the sounding-out procedure, the children can figure out and verify the pronunciation of words that they are not able to identify by sight.

But before children begin sounding out words in this program, they work on spoken word blending and phonemic analysis activities. They practice saying words slowly and saying them fast. They also practice rhyming by starting with different beginning sounds and saying a specified word ending. They practice sequencing events so that they develop a general skill of combining the "first event" with the "next event," which is analogous to combining "the first sound" with the "next sound," and so on.

All of the instruction is accompanied by a great deal of practice. The words the students read in the program stories are comprised of the sounds they are learning. To facilitate "real-world" reading the children learn and practice words that are irregular as well as regularly spelled words.

Just as the decoding activities are sequenced so that the children work first on easy examples and then on more difficult applications, the comprehension activities are also sequenced. After children are introduced to story reading, they answer questions while reading the story. When the story is completed, the students predict what the story picture will show. They then answer questions about the story picture. Children are then introduced to a written comprehension activity. (The scope and sequence chart for this program appears in Appendix A.)

Method

Selection of the Students

The 20 children who participated in this study were first-grade students who (a) were identified by a teacher as most likely to experience academic difficulties (as determined by kindergarten records and observations from the first six weeks of school); and (b) exhibited difficulties with reading, but were ineligible for other support programs in the school, such as Reading Recovery, learning disabilities, and Chapter 1. (Over the course of the school year, one student became eligible for Chapter 1 services, but also remained an active participant in the study.)

Selecting students who met these criteria was based, in part, on discussions with colleagues concerned that a number of children who are ineligible for special programs are, nonetheless, in need of special help in learning to read. Most of the children in the two experimental groups were the sort of children who typically fall through the cracks.

During the year in which the study was conducted, the K-5 school included approximately 473 students (60.9% white, 35.9% black, 2.7 % Asian, and 0.4% Hispanic). Thirty-three percent of the students came from low-income families. There was a 40% student mobility rate. The average first-grade class size was 24. The two teachers in the experimental groups were both veteran teachers with 15-20 years of teaching experience and with at least 5 years of experience teaching the direct instruction reading program.

Students

The students in the study were in three pre-existing groups of low-achieving first graders in a school with a large number of low socioeconomic status students. Two of these groups were assigned to an experimental condition, and one, to a control condition. The students in the experimental groups received daily reading instruction from teachers who followed very specific lesson plans in the direct instruction reading program. In addition, in Phase 1 of the study, the students took part in discussions of informational books their teachers read aloud to them. (These discussions were based on the reciprocal teaching techniques more usually associated with reading rather than listening instruction.) In Phase 2 of the study, however, the students read short informational books and used the techniques of reciprocal teaching to discuss what they had read. The students in the control group did not receive any reciprocal teaching instruction.

The students in the control group (n = 9) received no reciprocal teaching instruction. They did receive the same decoding instruction as those in the two experimental groups. The control group students were administered the same set of assessments throughout the study. Although they received no special intervention, they participated in group discussions of stories that were read to them by the classroom teacher during Phase 1. During Phase 2, the students in the control group read the same trade books as those in the experimental group and discussed the books, but without using the reciprocal teaching techniques.

Procedure

Teachers learn about reciprocal teaching. The two experimental teachers attended a 1-1/2-day inservice that included an explanation of the rationale and development of reciprocal teaching, presentations of videotaped reciprocal teaching lessons, and a live demonstration of the technique with students. After the teachers began to implement the procedure, classrooms were observed by the first author, who served as a consultant. Feedback and coaching were provided to assure fidelity to the reciprocal teaching procedures.

Several group meetings were held with the teachers throughout the school year. The purpose of these meetings was to discuss and solve any difficulties the teachers were encountering while implementing reciprocal teaching. The teachers also met regularly to discuss direct instruction.

Conducting classroom reciprocal teaching instruction. When reciprocal teaching instruction first begins, the teacher talks about the four comprehension strategies students will learn, explaining why they are learning them, in what situations the strategies will be helpful, and how the students will go about learning them. It should be kept in mind that introductory activities such as these are only for the purpose of exposing students to the strategies. The explanation of purpose, which is reviewed regularly, is followed by instruction in the use of the four comprehension strategies. The purpose of this instruction is to train students to use procedures that will help them use the strategies when they read or listen to text.

An example of the training for the summarizing strategy follows. Students learn to create summaries by appropriately employing one or more of the following procedures:

1. deleting irrelevant information
2. deleting redundant information
3. creating a superordinate label for a list of items
4. locating the topic sentence
5. creating a topic sentence

The goal is for students to possess minimal competency in each of the strategies before they engage in discussions with the teacher and each other.

The teachers introduce each of the four comprehension strategies to their students in two 20-minute sessions. After this introduction, the group begins the discussion of a text. It is at this point that teacher modeling becomes paramount. During the initial days of reciprocal teaching, the teacher leads the dialogue and models how, while reading, to employ the four strategies. Students are encouraged to comment on the teacher's summaries, add their own predictions, ask for clarifications, and respond to the teacher-generated questions.

As reciprocal teaching instruction continues, more responsibility for initiating and sustaining the discussion is transferred to the students. The teacher now monitors the students as they employ the strategies. The teacher praises the students' attempts and provides further modeling and help as needed. The students monitor and evaluate their own performance, provide feedback to other students, assume greater control and responsibility for the experience, and apply the strategies across a number of different texts.

Intervention

The intervention for the two experimental groups occurred in two phases: *listening to text* and *reading text*. The success of Phase 2 of the study was premised, of course, on the assumption that the students had learned to decode well enough to read independently some simple informational books. Thus, the emphasis on a decoding program that would permit students (by the spring semester of first grade) to read well enough to take part in Phase 2 of the study.

Phase 1: Listening to text. Phase 1, listening to text, lasted from October through February. In addition to their regular reading instruction, the experimental groups received reciprocal teaching instruction. The teachers read aloud expository passages (approximately second-grade level) to the students. They also read some scripted material that had been developed in earlier reciprocal teaching projects. The scripted material provided a model for the two teachers who were just learning how to conduct reciprocal teaching lessons. Later, a variety of science and social studies trade books selected from the school library were read to the children. These texts covered a wide range of topics, such as animals and plants. Each teacher read aloud from the same passages, scripts, and books in the same sequence. During Phase 1, reciprocal teaching instruction occurred in 20-minute sessions three times per week.

Phase 2: Reading text. In early March, the students began reading and discussing trade books using the reciprocal teaching technique three to four times per week. They worked in approximately 20-minute sessions. (See Appendix B for a list of the trade books read.) All the lessons were audiotaped. In addition three lessons were videotaped.

The following excerpt is taken from a reciprocal teaching lesson with a group of 7 first-grade students. This lesson occurred on the 10th day of instruction during Phase 1. The teacher was reading the text aloud. Note the instructional scaffolding the teacher employed. Reciprocal teaching employs the notion

of scaffolded instruction, which originated in the science of cognitive psychology. In scaffolded instruction, teacher support is adjustable and temporary (Wood, Bruner, & Ross, 1976). In reciprocal teaching instruction, the teacher follows the tenets of scaffolding by supporting each student in the acquisition and mastery of the four strategies through the use of explanation, instruction and modeling. The support is temporary, however, and the students are challenged to use these strategies independently as they display increased competence in reading comprehension.

The interaction pattern between the teacher and the students is also noteworthy. In a more traditional discussion, a typical pattern would be teacher-student-teacher-student, etc. The excerpt from this discussion reveals a different pattern.

reviewing text read yesterday: summarizing:	**Teacher:**	Yesterday we began reading, "How Animals Sleep," What did we learn?
	Jim:	Some students sleep in a tree.
	Mary:	They sleep in safe places.
	John:	They curl up in ground, some have a den under the ground and sleep in there.
predicting:	**Teacher:**	Good, remember yesterday we said we would talk about these animals today. *Showed children picture in book.* What animal is this?
	Children:	Walruses!
	Jim:	I've seen them on TV.
	Joe:	I've seen a real one on the arctic.
	Teacher:	I've seen them in the zoo and on TV. Let's listen. Think of a good question you can ask and you'll call on someone to answer your question. *reading from text* "Sometimes many animals crowd together to sleep. Walruses usually live in large herds in the icy waters of the far north. From time to time they gather on rocky shores and rest."
questioning:	**Nancy:**	Who lays in a group?
	Mary:	Walruses and other kinds of animals.
clarifying:	**Teacher:**	What word did they use besides group in this paragraph?
	Mary:	Together
	Joe:	Gather
	Sue:	Herd

	Teacher:	Herd, that's another word for group. Who can ask another question?
questioning:	**Joe:**	What animal laid on the rocky shores?
	Ron:	Walruses.
scaffolding:	**Teacher:**	Who could ask a why question. We're talking along the same line about the rocky shores.
	Mike:	Why did they lay on the rocky shores?
	Tina:	To sleep.
	Teacher:	Remember to raise your hand if there are any words that you don't know the meaning of.
reading from text:		"This walrus is sleeping on its side. (*shows picture*) You can see its front tusk. By fanning its flipper in the air, a walrus stays cool in the warm sun."
requesting clarification:	**Nancy:**	I didn't understand flipper.
	Teacher:	We can show you what a flipper is (*showed picture in book*). It's like his arm that he uses to swim with.
	Sue:	What stays cool in the warm sun?
	Joe:	Walrus.
	Teacher:	Now turn it around and ask the how question.
	Joe:	How do they stay cool?
	Mike:	They use those things they use to swim.
	Teacher:	OK, Do you remember what that's called?
	Mike:	(*pause*) . . . Flippers!
	Teacher:	What does he do with his flippers?
	Mike:	*(motions with his hands in a fanning manner)*
	Teacher:	Fans it. *(shows picture)* He's taking his flipper and fanning himself to stay cool while he rests.
	Teacher:	*(reading from text)* "It seems hard for walruses to rest. They are always snipping and snorting. When one turns over it wakes up another and another and another."

	John:	How does it wake up another walrus?
	Mary:	Because he sniffs and snorts when he turns over.
modeling questioning:	**Teacher:**	Why do you think they wake another one up when they roll over?
	Mike:	Because they are so close together.
	Teacher:	Who can summarize it? Tell me in your own words what this story was about.
	Chuck:	Walruses.
	Teacher:	Tell me more.
	Chuck:	Walruses and how they keep cool and (*pause*)
	Teacher:	And how they what . . .
	Chuck:	Sleep.
predicting:	**Teacher:**	We are going to read about what next? *(showing the children the next picture)*
	Children:	Fish.
	Teacher:	What do you think this is going to be about?
	Tina:	Fish and sharks.
	Teacher:	Okay, but what about them?
	John:	What they eat.
	Jim:	How they stay in the water and breath.
	Teacher:	So far what has this book been about?
	John:	Animals and what they do.
	Teacher:	Every animal that we've read about has told about what?
	Ron:	How they sleep.
	Teacher:	So, what do you think this will tell us about when we read about the fish?
	Ron:	How the fish sleep.
	Teacher:	Let's listen and see if we are right.

	Teacher:	*(reading from text)* "Unlike you, fish can never close their eyes. They have no eyelids. This shark, a kind of fish, lies still in an underwater cave."
	Chuck:	What cave looks like?
providing feedback	**Teacher:**	Does this tell us what a cave looks like?
	Chuck:	*(shakes his head no)*
modifying the task	**Teacher:**	Ask a question, a who question.
	Chuck:	Who sleeps in a cave?
	Justin:	A shark.
	Sue:	Who can't close their eyes?
	Ron:	Fish.
	Teacher:	Who can ask a why question about that?
	Mike:	Why can't the fish close their eyes?
	Chuck:	They don't have no eyelids.
	Teacher:	*(reading from text)* "Look at the mouth of the parrot fish. Do you see the jelly-like bubbles the fish is blowing around itself? Inside the bubble, the parrot fish is safe from larger fish while it rests during the night." *(shows picture)*
	Nancy:	How are they safe from larger fish?
	Jim:	They blow bubbles around themselves?
	Teacher:	What about a why question?
	Ron:	Why does the parrot fish blow bubbles around itself?
	Chuck:	To sleep and protect himself from the bigger fish.
	Teacher:	Who can tell in their own words, summarize, what was this story about?
	Jim:	This was about fish and sharks.
	Teacher:	What was important that we learned here. What's something you didn't know before?

Jim: How the fish protect themselves.

Joe: I didn't know that sharks slept in caves.

Sue: I didn't know that the sharks don't have no eyelids. They can't close their eyes. *(and so the lesson continues)*

Assessments

A variety of measures were used to assess the effectiveness of the reciprocal teaching instruction. To evaluate the instructional procedure, teachers audiotaped the reciprocal teaching lessons. Samples of these audiotapes were evaluated to ascertain change in the quality of the dialogue over time as well as fidelity to the reciprocal teaching process. At several key intervals throughout the study, we administered assessments in which students performed the four reciprocal teaching activities independently.

Expository passages from 300 to 425 words were written at approximately a second-grade reading level. Responses to comprehension questions that accompanied these assessment passages were the principal dependent measures. The program-specific-measures included (a) an assessment of general comprehension ability and (b) criterion-referenced tests of the four major strategies. The assessment of general comprehension ability required students to listen to a passage and then respond orally to textually explicit, textually implicit, and transfer/application comprehension items. It required the students to incorporate all the strategies and apply them effectively to answer comprehension questions.

A criterion-referenced test assessed the four strategies: summarizing, questioning, predicting, and clarifying. In this test, students were read a brief passage and then asked to give a brief summary, generate a question aimed at the main idea(s), indicate any need for clarification, and predict what would occur next. A criterion-referenced test provided a more diagnostic picture of the students' competence in the instructional activities.

Results

Pretesting

Pretesting occurred in September. All of these pretests were conducted orally, with the examiner reading the text and students responding orally to questions. The students in both experimental and control classrooms were pretested on the two measures: passage assessments as a measure of listening comprehension, and criterion-referenced measures of reciprocal teaching strategy knowledge and use. These tests were administered as baseline measures prior to the beginning of the reciprocal teaching instruction. All of the tests were scored by two raters. A 94% interrater reliability was established.

The descriptive statistics based on the pretest results for these students are shown in Table 1. The data reported here are the percent "correct" on the comprehension questions on the passage assessments. An analysis of variance (ANOVA) was used to test for differences between the groups prior to any intervention. The mean scores between the experimental and control groups on the passage were not significantly different, $F(1,19) = .22, p > .25$. The results of the passage pretest measures indicate that the children demonstrated similar listening comprehension abilities prior to the reciprocal teaching intervention. The ANOVA results for the strategy test, $F(1,19) = 1.77, p > .10$, reveal no statistically significant differences between these groups.

Table 1

Mean Scores (and Standard Deviations) on the Passage and Strategy Pretests

	Passage	Strategy
Experimental Total	38.64 (19.73)	30.57 (28.98)
Experimental Group 1 (n = 4)	40 (19.47)	14.25 (24.06)
Experimental Group 2 (n = 7)	37 (21.38)	39.86 (17.26)
Control Group (n = 9) (12.53)	42 (21.21)	43.77

After approximately 8 days of strategy training, but prior to the actual use of reciprocal teaching techniques with the teacher-read passages, another criterion-referenced measure of strategy knowledge was administered. This measured only the effects of training. Table 2 shows the results of the strategy pretest and strategy test after training.

Table 2

Mean Scores (and Standard Deviations) on the Strategy Pretest and Strategy Test After Training (Comprehension Questions)

	Strategy Pretest	After-training Strategy Test
Experimental Groups	30.57 (28.98)	31.57 (31.23)
Experimental Group 1 (n = 4)	14.25 (24.06)	23.75 (21.50)
Experimental Group 2 (n = 7)	39.86 (17.26)	43.14 (32.85)
Control Group (n = 9) (21.22)	43.77 (26.77)	45.22

There was no significant effect of the training alone for either the experimental group, $F(1,21) = .25$, $p > .25$, or the control group, $F(1,17) = .01$, $p > .25$. Also, there was no statistically significant difference between the experimental and the control group on the strategy assessment administered immediately following the strategy training, $F(1,19) = .5, p > .25$. A comparison of the strategy pretest and the after-training strategy test indicates that strategy training alone is not sufficient to improve comprehension.

After the two experimental groups received 3 months of reciprocal teaching instruction (January), two interim passage assessments were administered. The results, which can be found in Table 3, indicate no statistical differences between the experimental group and the control group, $F(1,18) = .02, p > .25$.

An analysis of variance (ANOVA) showed a statistically significant difference in the experimenter's group performance on the passage assessments from the pretest to the interim test, $F(1,20) = 10.5, p < .01$. There was no statistical difference for the control group on the passage assessment during the same time period, $F(1,17) = 2.66, p > .25$.

Table 3

Mean Scores (and Standard Deviations) on the Passage Pretest (Oct.) and Interim Test (Jan.)

	Pretest	Interim
Experimental groups	38.64 (19.72)	56.50 (19.19)
Experimental Group 1 (n = 4)	40 (19.47)	50.63 (24.36)
Experimental Group 2 (n = 7)	37 (21.38)	60.42 (16.16)
Control Group (n = 9) (12.53)	42 (16.24)	53.06

Posttesting

The students were posttested in May using the same type of assessments administered during the pretesting. Figure 1 depicts the mean performance of each group on the passage assessments. The data indicate that the students typically were achieving at approximately a 40% accuracy on the comprehension questions during baseline. With the introduction of the reciprocal teaching procedure, the experimental groups' accuracy increased gradually, but steadily.

Significant improvements in the accuracy with which the students responded to sets of comprehension questions (measuring the recall of text-explicit, text-implicit, and script-implicit information) suggests that the instruction did indeed promote increased comprehension. Ten of the eleven students in the experimental groups made gains in their scores from pretest to posttest. There was a statistical

significant effect for the experimental group on the passage assessments from pretest to posttest, $F(1,21) = 3.98, p < .10$. There was no statistical difference for the control group on the passage assessments from pretest to posttest, $F(1,17) = 2.6, p > .10$.

[Insert Figure 1 about here.]

The scores reported in Figures 2a-2c reflect the proportion of points that students earned for each of the four strategies. Although the group scores were fairly comparable during the baseline(pretest), on the posttests, experimental Group 2 surpassed experimental Group 1 and the control group in their ability to make summaries, generate questions, and make predictions based upon the text. The improvements in the students' abilities to execute the strategies suggest that what had been taught was, in fact, internalized by the students.

[Insert Figures 2a, 2b, and 2c about here.]

The data reported in Table 4 are the percentage "correct" on the comprehension questions on the strategy assessments. The two experimental groups made observable growth on the strategy pretest to posttest.

In addition to the battery of pretests, another assessment measure was included to evaluate children's ability to respond to comprehension questions after reading a text. Up to this point, all the assessments had been conducted in the listening mode. This additional assessment provided information about each students' ability to read a new trade book and discuss it--using reciprocal teaching strategies--and then to respond to eight comprehension questions. (See Table 5 for these results.)

Table 4

Mean Scores (and Standard Deviations) on the Strategy Pretest and Strategy Test after Training (Comprehension Questions)

	Pretest	After Training Strategy Test	Post
Experimental Groups	30.51 (28.98)	31.57 (31.23)	40.14 (30.82)
Experimental Group 1 (n = 4)	14.25 (24.06)	23.75 (21.50)	40.50 (32.46)
Experimental Group 2 (n = 7)	39.86 (17.26)	43.14 (32.85)	53.30 (27.71)
Control Group (n = 9) (21.22)	43.77 (26.77)	45.22 (12.69)	50.50

Table 5

Mean Scores on the Trade Book Posttest

	Oral Reading %	Question Answering %
Experimental Group 1 (n = 4)	92	22
Experimental Group 2 (n = 7)	94	35
Control Group (n = 9)	87	17

The word-reading scores for all the groups are very similar. There was no statistical difference between the experimental and control group on answering the comprehension questions after reading the whale trade book, $F(1,18) = 2.8, p < .25$.

A closer examination of the students' scores on the strategy component of the trade book assessment reveals that both experimental groups performed considerably higher than the control group on three of the four reciprocal teaching strategies (predicting, questioning, and summarizing). The students in all three groups requested the same number of clarifications. (See Table 6 for these results.) There was a statistically significant difference between these groups on the strategy component of this assessment, $F(1,18) = 5.37, p < .05$.

Table 6

Percentage of Points on the Strategy Component of the Trade Book Assessment

	Prediction	Summary	Questions
Experimental Group	67	75	73
Experimental Group 1	60	75	86
Experimental Group 2	74	76	60
Control Group	26	45	58

These are troublesome findings. One could legitimately argue that these students need exposure to a variety of expository texts and more instructional time to deal effectively with questions about expository text. Perhaps the text was too difficult. However, the text that was used was very similar to the books ones used during the reciprocal teaching lessons.

The contrast with this data can be found in the children' scores in responding to questions about narratives. The results in Table 7 are the mean scores on answering questions about stories in their regular reading program. Two assessments with the narrative text were administered. The results of the assessments given in February indicate that the experimental group was statistically significantly higher than the control group, $F(1,18) = 6.8, p < .01$. There were no statistically different effects between the two groups on the narrative assessment administered in May, $F(1,18) = 1.56, p > .25$.

Table 7

Mean Scores on the Regular Classroom Assessments (Feb. and May)

	Oral Reading %		Question Answering %	
	Feb.	May	Feb.	May
Experimental Groups	98	98	90	78
Experimental Group 1 (n = 4)	99	99	93	78
Experimental Group 2 (n = 7)	98	98	88	78
Control Group (n = 9)	98	98	67	63

The end-of-year results from the SRA test used in the district are shown in Figure 3. Even though the total reading score was slightly higher in the two experimental groups, $F(1,18) = 1.9, p < .10$, the listening comprehension, $F(1,18) = .012, p > .25$, and vocabulary subtests, $F(1,18) = .89, p > .25$, revealed no significant difference among the three groups.

[Insert Figure 3 about here.]

Discussion

The purpose of this exploratory study was to investigate the effectiveness of combining two approaches to reading instruction with first-grade students at risk for learning to read. Both reciprocal teaching and the direct instruction program are well-known and well-researched programs. Both programs can and have been used independently, but their value in combination became clear. The results suggest that careful instruction in both comprehension and decoding are important in a beginning reading program. The students in this study benefit because the use of the reciprocal teaching procedure within the listening mode *before* they were able to read text helped improve their ability to understand expository text.

Two unexpected positive outcomes of this exploratory study surfaced: one involving students, and the other, teachers. The students generated the reciprocal teaching strategies for the stories in their direct instruction reading program. The teachers were so enthusiastic about the reciprocal teaching procedure once they had mastered it that they used it with their other students.

Several explanations can be offered for these positive outcomes. Reciprocal teaching represents an instructional approach that not only includes four strategies, but also promotes some instructional concepts: the modeling and instruction of the teacher, the gradual transfer of responsibility to the students, the provision of declarative and conditional knowledge regarding the use of the strategies, and interactive instruction and discussion. It must also be noted that the amount of student engagement was consistently high.

It was not the intent of this investigation to study teacher change, but during this study, several teacher change issues emerged. One of the most important has to do with the on-going support necessary for the implementation of instructional change. Each of the experimental teachers said they would not have continued using reciprocal teaching without support from the consultant.

An additional outcome of the study pertains to the characteristics of trade books that make them suitable for the reciprocal teaching lessons. A variety of trade books were used in the study. Some appeared more suitable than others. The two experimental teachers reported the following text characteristics to be most suitable for reciprocal teaching lessons:

1. Predictable text that includes pictures to help predict future content.

2. Content dealing with concepts that flow without too much repetition.

3. Text reflecting an appropriate amount and depth of content for the current stage of the group's ability to discuss text.

Will the utilization of two different approaches work in any classroom? We believe that any teaching procedure--if it is to have practical utility--must be instructionally feasible, that is, it must be capable of being implemented by regular teachers under conditions approaching those of the normal classroom. We found that instruction in both of these approaches could be sensibly carried out by the same teacher. In this case, the teachers took the time to introduce all the aspects of reciprocal teaching while continuing to use their direct instruction reading program, because they believed the dividends to be considerable.

The debate about the appropriate instructional emphasis for beginning reading programs is still unresolved. Much of the controversy centers on the dispute between code-emphasis versus meaning-emphasis instruction. Adams's (1990) discussion of first-grade reading programs concludes that "approaches in which systematic code instruction is included along with meaningful connected reading results in superior achievement overall" (p. 12). It seems clear that the students in this experimental study were involved in systematic code instruction and the reading and discussion of meaningful connected text.

The two programs used in this study represent different types of instructional philosophy. The reading program emphasizes direct instruction, and reciprocal teaching stresses a type of instruction that Collins (1982) describes as a cognitive apprenticeship (see Collins, Brown, & Newman, 1989, for a more complete view of this topic). An exploratory study, by its very nature, raises important questions. This distinction between these models leads to questions such as:

- Is there one instructional model that is more appropriate for students who are at risk for learning to read?

- Is direct instruction more effective for decoding, whereas a cognitive apprenticeship approach is better for comprehension?
- To what extent can instructional models be combined?
- How can instruction enhance first-grade students' metacognition--knowledge and use of strategies?

These questions all merit research attention.

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FIGURE 1
MEAN SCORES ON PASSAGE ASSESSMENTS

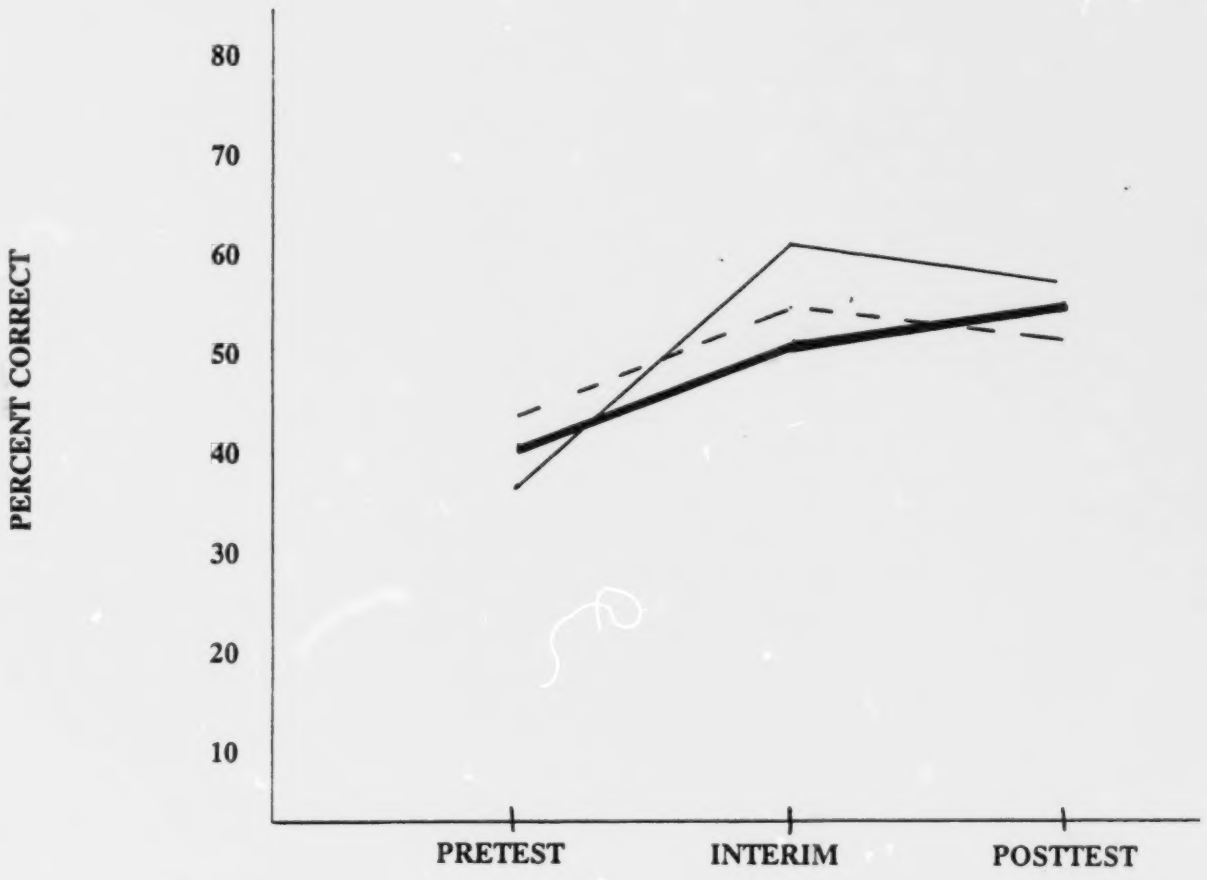


FIGURE 2A
STRATEGY ASSESSMENTS:
PRETEST, AFTER TRAINING, POSTTEST

EXPERIMENTAL GROUP 1

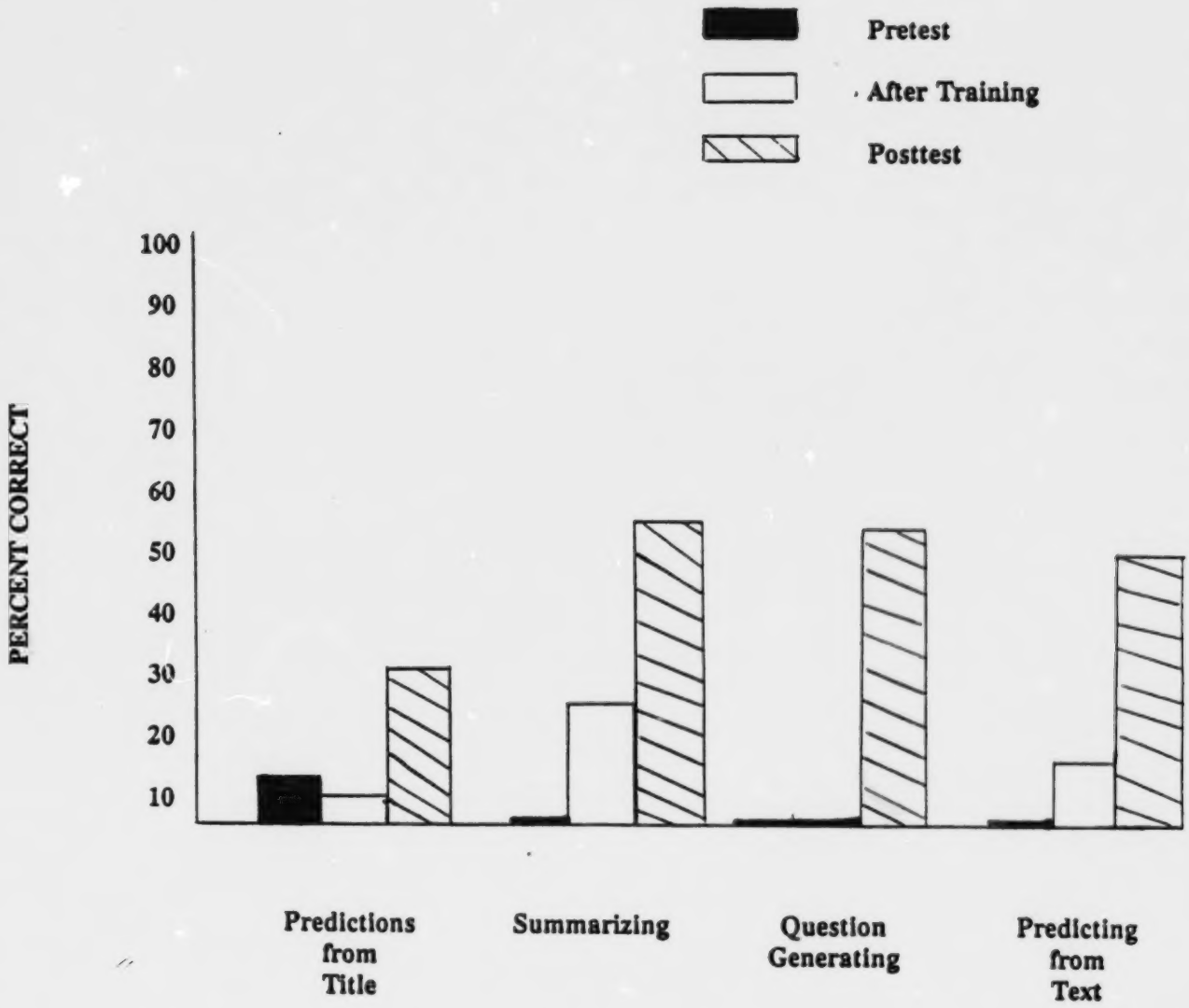


FIGURE 2B
STRATEGY ASSESSMENTS:
PRETEST, AFTER TRAINING, POSTTEST

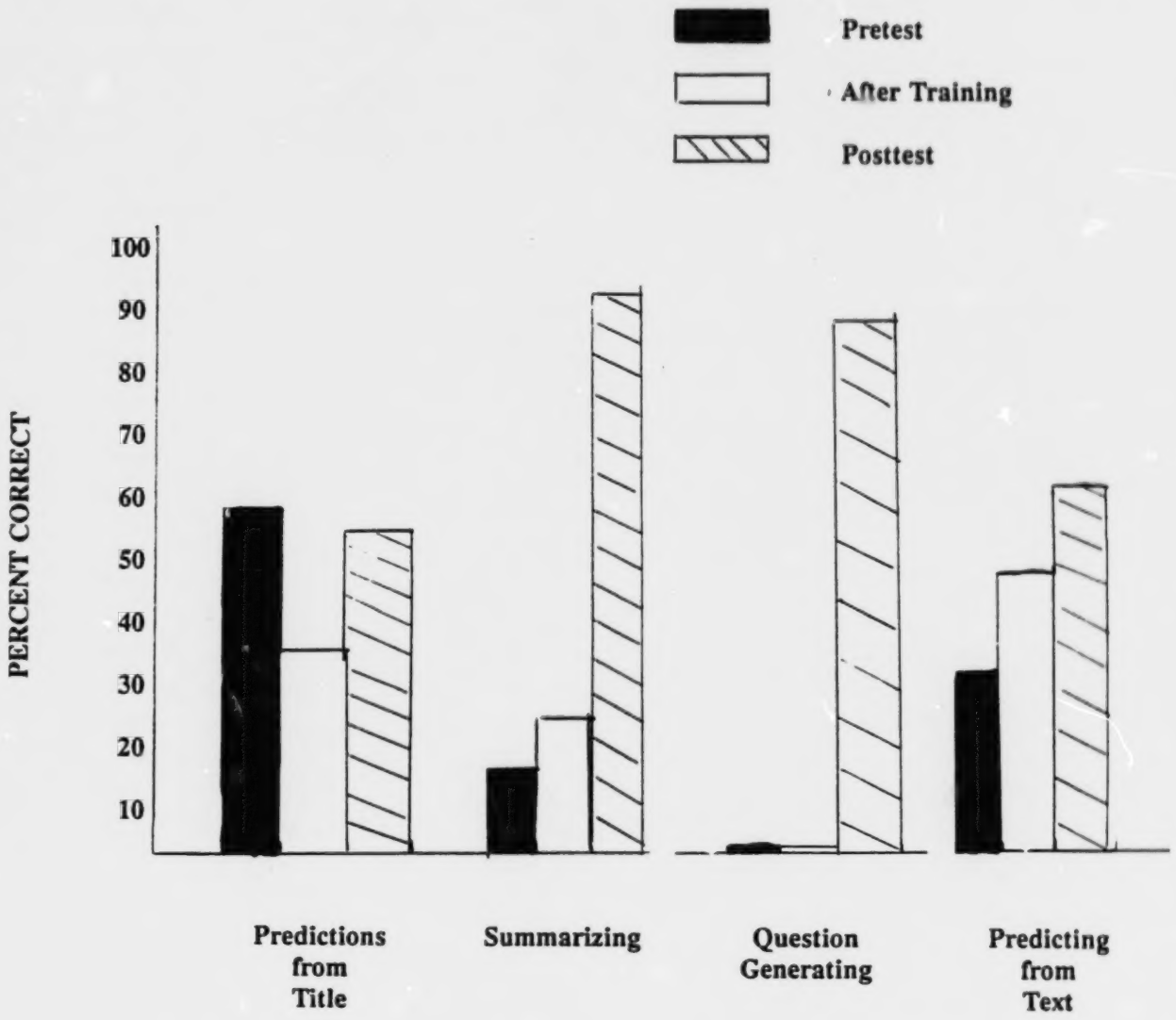


FIGURE 2C
STRATEGY ASSESSMENTS:
PRETEST, AFTER TRAINING, POSTTEST

CONTROL GROUP

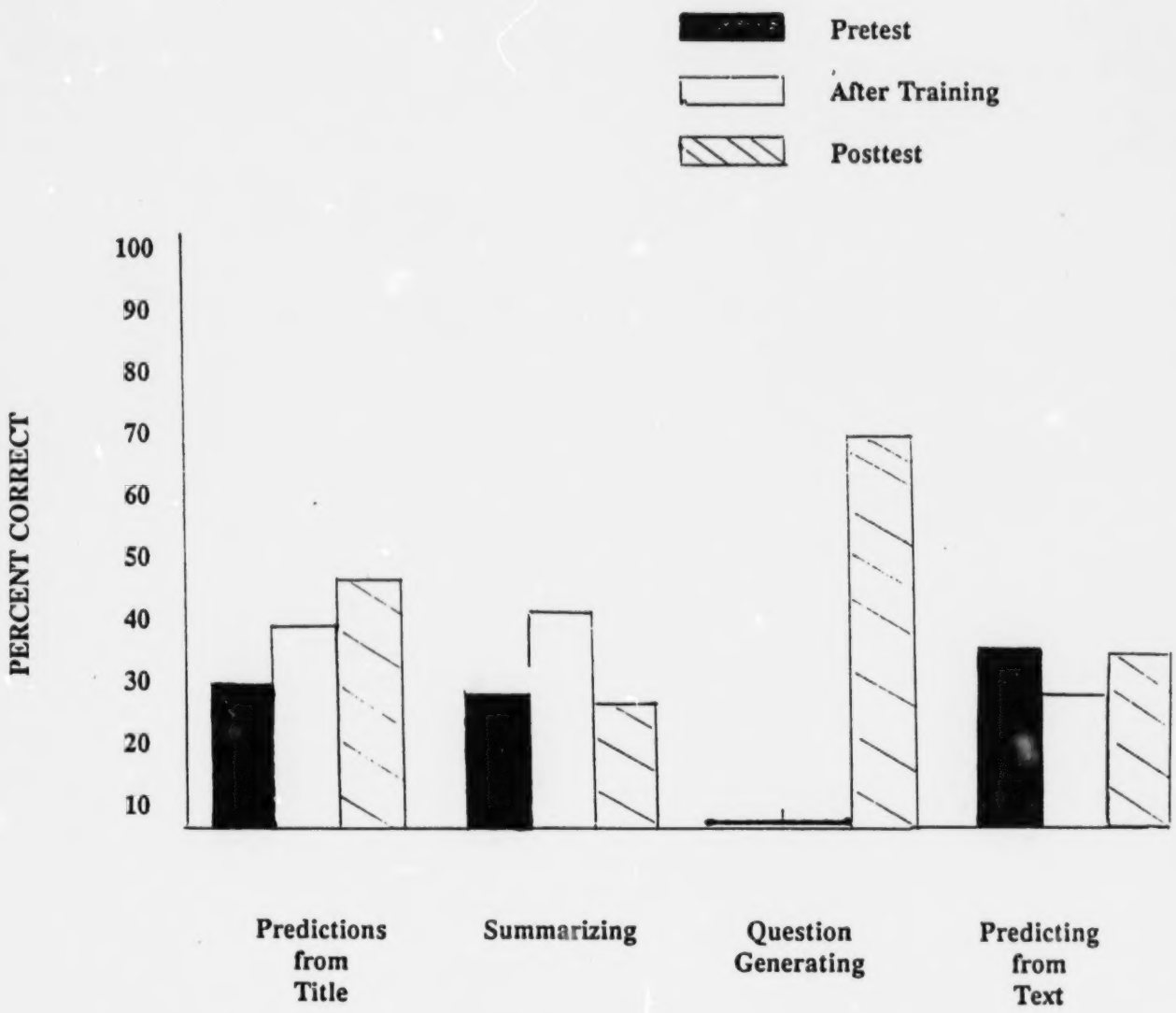
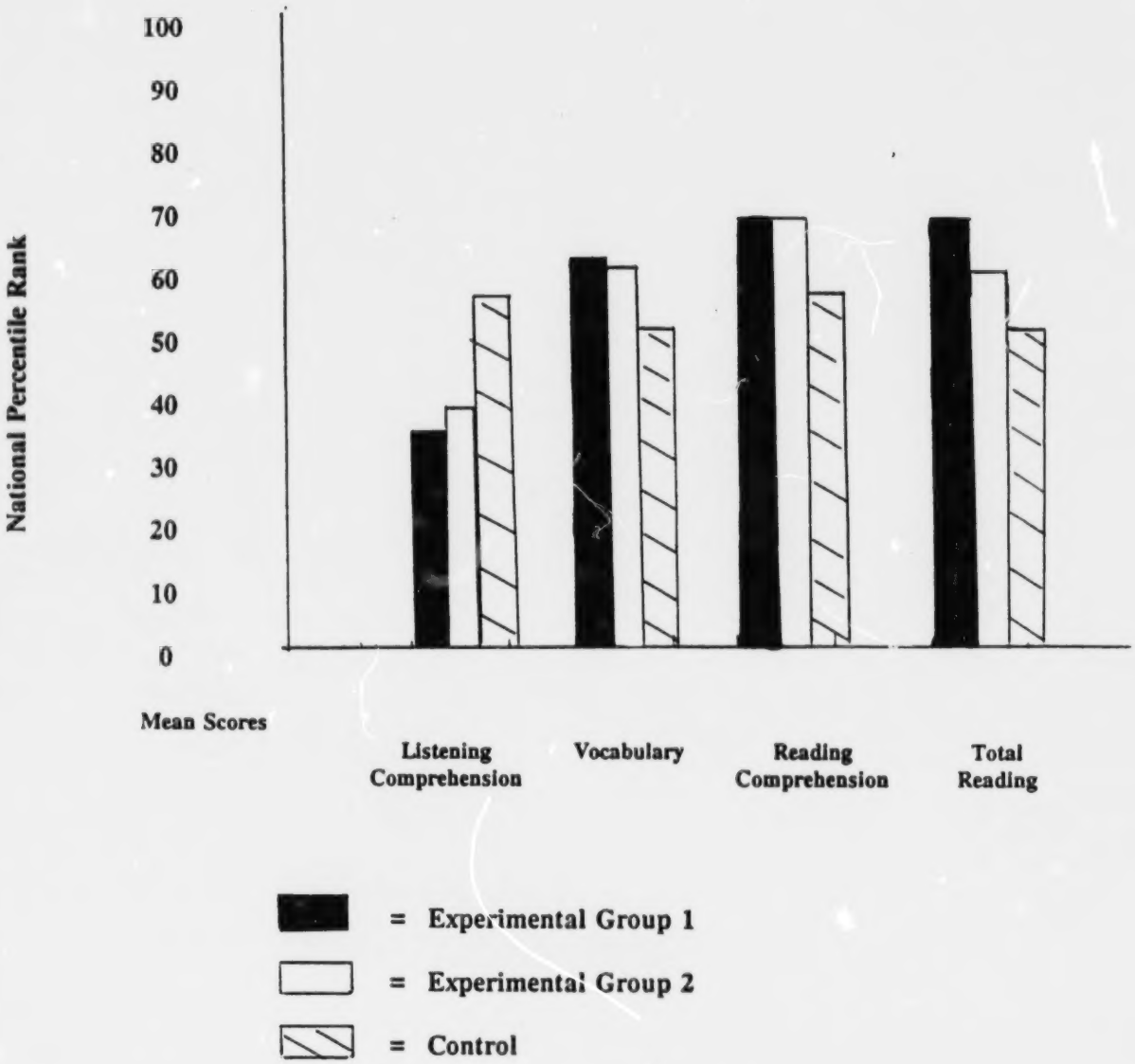
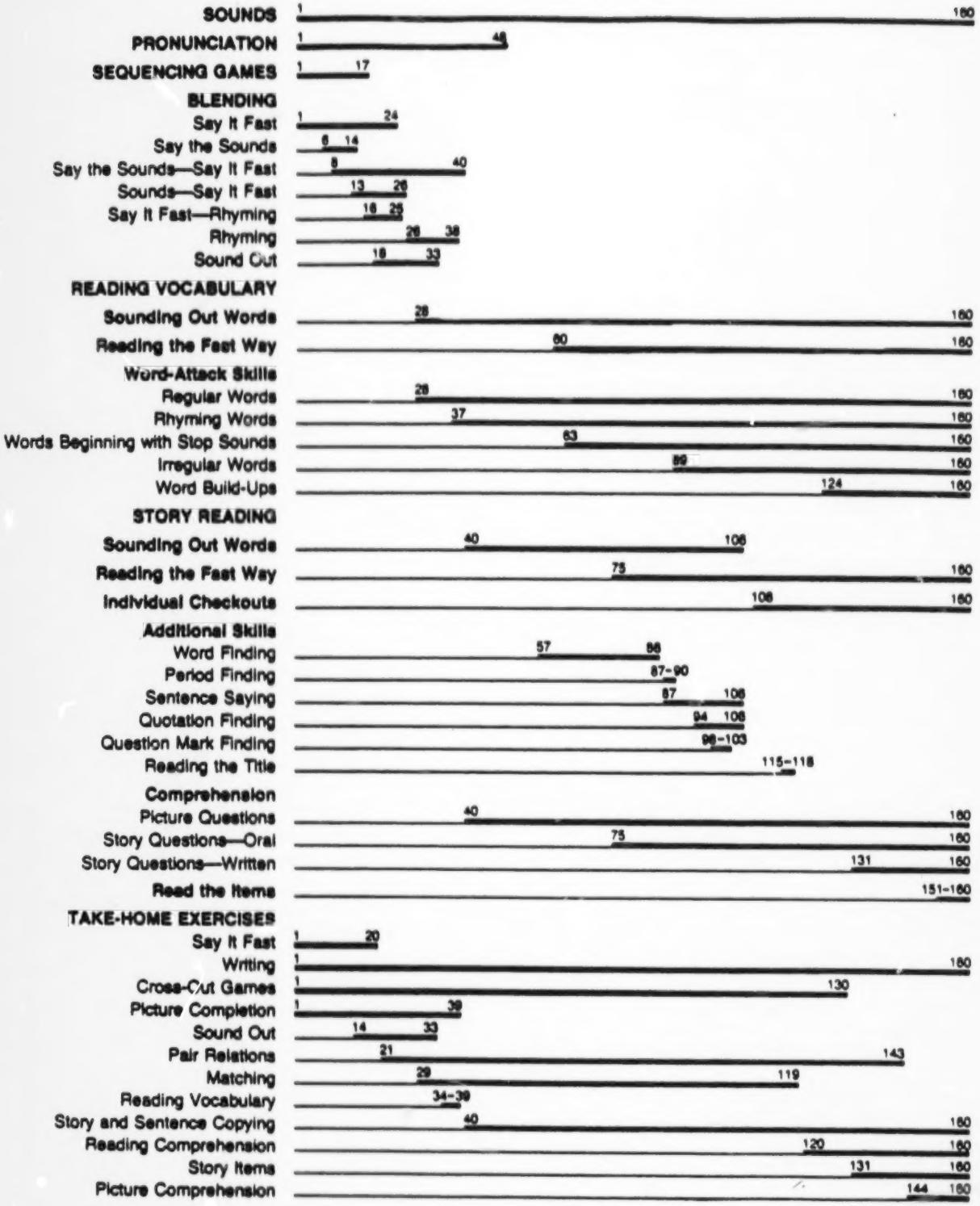


Figure 3
SRA SPRING 1989



APPENDIX A

The Scope and Sequence Chart for Reading Mastery

SCOPE AND SEQUENCE CHART

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APPENDIX B

Sequence of Trade Books used in Reciprocal Teaching:

1. *Now I know birds* by Susan Kuchalla, Troll Associates (1982)
2. *Now I know trees* by Sharon Gordon, Troll Associates (1983)
3. *My five senses* by Aliki, Thomas Y. Crowell Company, New York (1962)
4. *Farms* Wonder Starters, Wonder Books New York (1973)
5. *From seed to pear* by Ali Mitgutsch, Carolrhoda Books, Inc. Minneapolis (1984)
6. *The life cycle of the penguin* by Paula Z. Hogan, Raintree Children's Books (1979)
7. *The life cycle of the butterfly* by Paula Z. Hogan, Raintree Children's Books (1979)
8. *I can be a baker* by Dee Lillegard, Children Press Chicago (1986)